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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,705	01/27/2004	Steffen Leonhardt	71186	3838
23872	7590	03/24/2006	EXAMINER	
MCGLEW & TUTTLE, PC			NGUYEN, HUONG Q	
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SCARBOROUGH, NY 10510-9227			3736	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/766,705	LEONHARDT ET AL.	
	Examiner	Art Unit	
	Helen Nguyen	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 27 January 2004.
- 2a) This action is FINAL.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) 1,2,9,10,16-18,20 and 24 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 27 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \*    c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

<ol style="list-style-type: none"> <li>1)<input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3)<input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)          Paper No(s)/Mail Date <u>1/27/2004</u>.</li> </ol>	<ol style="list-style-type: none"> <li>4)<input type="checkbox"/> Interview Summary (PTO-413)          Paper No(s)/Mail Date. _____.</li> <li>5)<input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6)<input type="checkbox"/> Other: _____.</li> </ol>
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## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 1/27/2004 is/are acknowledged.

The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10766705, filed on 1/27/2004.

### ***Claim Objections***

3. **Claim 24** is objected to because of the following informalities: Claim 24 seeks to further limit the disclosed wireless means introduced in Claim 23. However, Claim 24 states dependency back to Claim 22, which does not mention said wireless means along any part of its dependency chain. Therefore, Claim 24 should refer back to **Claim 23**, not Claim 22. Appropriate correction is required.

4. **Claims 1, 2, 16, 20** are objected to for usage of the phrase "at least" which renders said claims indefinite. Language comprising of "at least" makes it unclear whether the particulars are claimed or not.

5. **Claims 9-10** are objected to because of the following informalities:
  - (a) "electric lines" disclosed in both claims should be "electrode feed lines" to be consistent with previously used terminology;

(b) **Claim 9** discloses plural belt closures but claims dependency from **Claim 7**, which only discloses a single belt closure. Thus, either Claim 9 should depend from **Claim 8**, which discloses said plural belt closures, or Claim 9 should only recite a single “belt closure.”

Appropriate correction is required.

6. **Claims 16-18** are objected to for usage of the terms “strand” and “strut” in a manner that is not consistent with the definition known to one of ordinary skill in the art, thus possibly rendering the claims indefinite. It is noted that if applicant wishes to use such terms in a manner that deviates from the respective common definitions, applicant should clearly explain in the entire disclosure exactly how such terms should be interpreted.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-3, 5-7, 9, 12-13, 16-18, 20-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoch (US Pat No. 5313952) in view of Fry et al (US Pat No. 4539640).

9. In regards to **Claim 1**, Hoch discloses an electrode belt (10) comprising:

(a) a belt material of foam (20), and cloth backing strips (22, 24) (Col.2, line 64-65), wherein cloth is capable of being bent or flexed, thus constituting said belt as elastic at least in some

sections, wherein said electrode belt fully surrounding a test subject over the circumference of the body, best seen in Figure 1 (Col.2, line 2-4);

(b) at least two electrodes, referred to as “disk pad” (16), on said belt material as shown in Figure 1 (Col.3, line 8);

(c) electrode feed lines, referred to as “probe” (50), that extend from said electrodes and thus extend along belt material (Col.3, line 24);

(d) a feed line, referred to as “coupling wire” (54), connected to said electrode feed line from a feed point, referred to as “probe support element” (52), best seen in Figure 2 (Col.3, line 23-27).

10. Hoch discloses said electrode belt with at least two electrodes, but does not disclose said belt with at least 16 electrodes. Fry et al (US Pat No. 4539640) disclose an electrode belt (11), best seen in Figure 1, containing at least 30 electrodes (Col.5, line 57-60) to provide accurate and proper impedance imaging results even in the presence of excessive patient movement, rendering the belt improved and more convenient to use (Col.5, line 6-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include at least 16 electrodes as taught by Fry et al with the electrode belt of Hoch, to improve the imaging and monitoring process and provide better results with said belt.

11. In regards to **Claim 2**, Hoch discloses at least two shaped elements, referred to as “body engaging surface” (36), corresponding to the at least two electrodes, which inherently provide padding for the at least two adjacent electrodes at the position of placement, such as a sternal or spinal depression of a test subject (Col.5, line 9).

12. In regards to **Claim 3**, Hoch discloses the electrodes arranged at equally spaced locations from one another on the belt material, as seen in Figure 1, as the nature of the belt allows for any desired arrangement of said electrodes (Col.2, line 15-17).

13. In regards to **Claim 5**, Hoch discloses said belt material having electrode feed lines (explained above) but does not disclose said belt and associated electrode feed lines forming plural belt segments. Fry et al disclose an electrode belt containing a plurality of electrodes arranged in rows as an effective arrangement for such numerous electrodes to contribute to the aforementioned quality of imaging results, shown in Figure 1 (Col.5, line 57-59). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine such electrode arrangement, as taught by Fry et al, when using a multitude of electrodes (i.e. at least 16), as explained above, because a large number of electrodes lends itself naturally to such arrangement.

14. Accordingly, a belt comprising of numerous rows inherently forms plural belt segments, wherein a segment is defined as any of the parts into which something can be divided, wherein in the instant case, a segment is defined as one electrode row of the belt surrounding the patient. Thus, it is said that the belt material having electrode feed lines forms plural belt segments with one or more electrodes arranged on the individual belt segments. Similarly, in regards to **Claim 6**, Hoch and Fry et al disclose said electrodes arranged at equal distances from each other as explained previously.

15. In regards to **Claim 7**, Hoch discloses a belt closure, referred to as “attachment mechanism” (28), provided between two adjacent electrodes as seen in Figure 1 (Col.3, line 2-7). In regards to **Claim 9**, as Hoch modified by Fry et al disclose an electrode belt with feed points and a belt closure, it is inherent that such feed points connected to said electrodes can be arranged at any desired location, such as on said belt closure, especially since any arrangement of parts is within the scope of the electrode belt disclosed by Hoch et al (Col.4, line 31-33). Also, please see the above claim objections for Claim 9.

16. In regards to **Claim 12**, Hoch discloses said shaped elements (36) corresponding to the last least two electrodes, as one or more of said electrodes bulging forward, best seen in Figure 1 (Col.3, line 8-10). In regards to **Claim 13**, Hoch discloses said shaped elements as projections also seen in Figure 1.

17. In regards to **Claim 16**, Hoch discloses said belt material comprising at least three strands: foam (20) sandwiched between two cloth backing strips (22, 24) (Col.2, line 64-65), wherein said strands extend in parallel along the length of said belt and are connected section by section by cross struts, referred to as “apertures” (26), best seen in Figure 1 (Col.2, 65-66).

18. Examiner notes, as previously stated in the above claim objections, that applicant uses the term “strand” and “strut” in a manner that strays from the typical definition known to one of ordinary skill in the art, wherein “strand” is commonly defined as “a complex of fibers or filaments that have been twisted together to form a cable, rope, thread, or yarn” and “strut” is commonly defined as a “brace consisting of a bar or rod used to resist longitudinal compression.”

However, as such definitions do not make sense with the inventive concept that has been disclosed in the specification, drawings, and claims, for the following claim rejections, “strand” is interpreted to mean “strip or band” while “strut” is interpreted to mean “aperture or opening.”

19. In regards to **Claim 17**, Hoch discloses said electrodes arranged in the area of said cross struts, best seen in Figure 1 (Col.3, line 51-55). In regards to **Claim 18**, Hoch discloses one of said strands as hollow and accommodates said electrode feed lines, as best seen in Figure 3. Specifically, Hoch discloses said foam strand (20) as hollow, wherein hollow is defined as having a cavity, gap, or space within, as evidenced by said apertures (26) formed thereon. Said apertures are used to attach said electrodes, to which said electrode feed lines (50) are connected, thus constituting said hollow strand accommodating said electrode feed lines (Col.3, line 51-62).
  
20. In regards to **Claims 21-22**, Hoch discloses an electrode belt but does not disclose said belt with a coding means. Fry et al disclose an electrode belt with a coding means, referred to as “male connector” (13) best seen in Figure 1, a plug type connection on an electronic unit, referred to as “data acquisition apparatus” (16) (Col.5, line 56-68), wherein said apparatus includes a digital/analog electronic unit (126), as shown in Figure 4, wherein said coding means is used to relay information gathered by the belt. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a coding means such as a plug type connection on a digital/analog electronic unit, as taught by Fry et al, with the electrode belt of Hoch, to provide an effective means of relaying information about the belt.

21. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoch in view of Fry et al, further in view of Epley (US Pub No. 20040097839).

Hoch as modified by Fry et al disclose an electrode belt but do not disclose silicone as the belt material. Epley discloses a device comprising of sensors, attached to the patient by a belt, referred to as “band” (26) best seen in Figure 1, comprising of silicone for maintaining a high level of friction to secure said belt (¶0043). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the electrode belt of Hoch as modified by Fry et al out of silicone, as taught by Epley, to ensure good frictional contact between the belt and patient for secure use.

22. **Claims 8, 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoch in view of Fry et al, further in view of Kristbjarnarson et al (US Pat No. 6461307).

23. In regards to **Claim 8**, Hoch discloses an electrode belt with a belt closure for at least one belt segment (as described above), but does not disclose said electrode belt with multiple belt closures. Kristbjarnarson et al disclose a sensor assembly comprising of at least two segments, referred to as “ribbon” (10), each segment having a belt closure or “latching mechanism” (332) (Col.6, line 49-50, 60-63) shown in Figure 1, to allow secure attachment of the ribbon to the body while allowing flexibility in sizing for different patients (Col.7, line 2-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a belt closure for each belt segment, as taught by Kristbjarnarson et al, on the electrode belt of Hoch as modified by Fry et al, to promote ease of use and sizing for different patients.

24. Similarly, in regards to **Claim 10**, as Hoch as modified by Fry et al, further modified by Kristbjarnarson et al have disclosed an electrode belt with feed points and multiple belt closures, it would be obvious to arrange such feed points at any desired location, such as on said belt closures, as any arrangement of parts is within the scope of the electrode belt disclosed by Hoch et al (Col.4, line 31-33).

Also similarly, in regards to **Claim 11**, Hoch as modified by Fry et al, further modified by Kristbjarnarson et al disclose feed points arranged symmetrically in relation to one another, best seen in Figure 1 of Hoch, as well as belt material split into two sections of approximately equal size, best seen in Figure 1 of Kristbjarnarson et al, for the reasons stated above.

25. **Claims 14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoch in view of Fry et al, further in view of Atlas (US Pat No. 6353396).

Hoch as modified by Fry et al disclose an electrode belt with shaped elements but do not disclose said shaped elements comprising cavities filled with a medium and closed by an elastic membrane, wherein said medium are liquids, gels, or gases. Atlas discloses shaped elements, referred to as “air cushions” (13, 15) placed on electrodes (12) to provide padding as well as anti-shock protection (Col.5, line 58-64), best seen in Figure 3, wherein air cushions are commonly known to comprise of a cavity closed by an elastic membrane and filled with a gas medium. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the shaped elements of the electrode belt disclosed by Hoch as modified by Fry et al, to be cavities closed by an elastic membrane and filled with a medium of liquid, gel, or

gas, as taught by Atlas, to provide padding for the electrode and the patient as well as exhibit shock absorbing capabilities for better functioning of the device.

26. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoch in view of Fry et al, further in view of Akiva (US Pat No. 6205346).

27. Hoch discloses an electrode belt with electrode feed lines but does not disclose said feed lines disposed or folded in a triangular, meandering or loop-like pattern. Akiva discloses an electrode device having electrode feed lines, referred to as “conductors” (17) connected to electrodes (Col.2, line 49-52), wherein said electrode feed lines are disposed in a loop-like pattern, as seen in Figure 1, to provide a method of containing said lines with minimal damage (Col.2, line 30-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose the electrode feed lines of the electrode belt of Hoch as modified by Fry et al, in the loop-like pattern as taught by Akiva, to provide an effective way to contain said lines without incurring damages to said lines.

28. **Claims 23, 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoch in view of Fry et al, further in view of Asai et al (US Pat No. 4681118).

29. Hoch discloses an electrode belt but does not disclose an evaluating unit. Fry et al disclose an evaluating unit (16) used to analyze information gathered from said belt. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an evaluating unit, as taught by Fry et al, with the electrode belt of Hoch, to provide an effective data analysis means coupled to said belt. However, Hoch and Fry et al do not disclose

a wireless means for wireless communication between said electrode belt and said evaluating unit.

30. Asai et al disclose an electrode assembly comprising a wireless transmitter (15) for wireless communication with a remotely placed receiver to provide a device that does not require the use of wires, allowing the receiver to be placed at any desired distance for greater convenience of use (Col.4, line 14-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a wireless means such as a transmitter, as taught by Asai et al, with the electrode belt and evaluating unit of Hoch as modified by Fry et al, to provide a more convenient method of transmitting data from the electrode belt to an evaluating unit.

#### *Allowable Subject Matter*

31. **Claim 20** is objected to as being dependent upon a rejected base claim (**Claim 1 and 16**), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### *Conclusion*

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hallon et al (US Pat No. 4751928), Burton (US Pub No. 20040236202), Cassel et al (US Pub No. 20020097155), and Mills et al (US Pat No. 4202344) all disclose an electrode belt.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Nguyen whose telephone number is 571-272-8340. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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3/17/06

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